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DOI:

[10.1080/23311908.2016.1214213](https://doi.org/10.1080/23311908.2016.1214213)

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*Document Version*

Publisher's PDF, also known as Version of record

*Citation for published version (Harvard):*

Hughes, N, Clasby, B, Chitsabesan, P & Williams, H 2016, 'A systematic review of the prevalence of foetal alcohol syndrome disorders among young people in the criminal justice system', *Cogent Psychology*, vol. 3, no. 1. <https://doi.org/10.1080/23311908.2016.1214213>

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Checked 29/07/2016

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Received: 05 April 2016  
Accepted: 14 July 2016

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## CLINICAL PSYCHOLOGY & NEUROPSYCHOLOGY | REVIEW ARTICLE

# A systematic review of the prevalence of foetal alcohol syndrome disorders among young people in the criminal justice system

Nathan Hughes<sup>1,2\*</sup>, Betony Clasby<sup>1,2</sup>, Prathiba Chitsabesan<sup>3,4</sup> and Huw Williams<sup>5</sup>

**Abstract:** Given the established association between foetal alcohol spectrum disorders (FASD) and risk of criminality and criminalisation, this systematic review examines the prevalence of FASD within youth justice systems. Four relevant sources were identified. Each source suggests a disproportionate prevalence in comparison to the general youth population. However, this masks significant variation between studies, and a much-heightened prevalence of FASD among Aboriginal youth in custody. The continued lack of research establishing prevalence, limits the potential for strong conclusions and suggests an imperative for improved processes of identification. This highlights systematic deficits in the ability to assess or even screen for FASD, with particular challenges for the youth justice system. Until such challenges can be resolved, it is likely that young people with FASD will remain hidden within a system in which they are at great risk of inadequate support, discrimination and criminalisation.

**Subjects:** Child & Adolescent Psychiatry & Clinical Psychology; Neuropsychology; Youth Offending and Youth Justice

**Keywords:** foetal alcohol spectrum disorders; foetal alcohol effects; foetal alcohol syndrome; youth crime; youth justice; systematic review

### ABOUT THE AUTHORS

This inter-disciplinary research team draws on expertise in neuropsychology, psychiatry, criminology and social policy to critically analyse the experiences of young people with developmental impairment. In particular, they have focused on experiences that serve to heighten the risk of criminality and criminalisation. This includes the influence of impairment on behaviour in specific contexts or situations, and the relationships between impairment and social risk factors for offending, such as educational disengagement and poor family functioning. It also includes processes of discrimination due to poor recognition and response to impairment within criminal justice systems that can hamper access to justice.

### PUBLIC INTEREST STATEMENT

Maternal consumption of alcohol during pregnancy can effect foetal development in ways that can impact upon a child's height, weight and facial appearance, as well as their cognitive ability, behaviour and social skills. Where such effects are significant, a diagnosis of foetal alcohol spectrum disorder (FASD) may occur. Symptoms related to FASD are known to increase risk of criminal behaviour. This review of research evidence suggests a disproportionately high rate of FASD among young people in the criminal justice system, particularly among Aboriginal boys in youth custody. However, there remain few studies of this population highlighting continued challenges in identifying and assessing potential symptoms of FASD among young people at risk of criminality. Without addressing to overcome the barriers of recognition and assessment, young people with FASD will remain hidden within criminal justice systems in which they are at great risk of inadequate support, discrimination and therefore ultimately criminalisation.

## 1. Introduction

Foetal alcohol syndrome (FAS) is diagnosed where there is evidence of:

- Abnormal facial features, including a smooth philtrum, thin upper lip and narrow opening between the eyelids.
- Height and/or weight at, or below the tenth percentile.
- Structural, neurological or functional deficits of the central nervous system; the latter including multiple deficits in: cognition; executive functioning; attention or hyperactivity; motor functioning; and social skills (Centers for Disease Control and Prevention, 2014).

The diagnostic criteria of the Centers for Disease Control and Prevention (Centers for Disease Control & Prevention, 2014) clearly state that, whilst symptoms must be suspected to result from prenatal alcohol exposure, “confirmed alcohol use during pregnancy is not needed if the child meets the other criteria”, Notwithstanding this formal definition, it appears that, in many practice contexts confirmation of maternal alcohol consumption is still sought and required before a formal diagnosis is given (Alberta Partnership on Foetal Alcohol Syndrome, 2003; Benz, Rasmussen, & Andrew, 2009; Clarren & Lutke, 2008).

A young person may be affected by prenatal alcohol exposure without developing all of the symptoms necessary for a diagnosis of FAS. Foetal alcohol spectrum disorders (FASD) is therefore employed as an umbrella term, incorporating a range of conditions indicative of particular combinations of foetal alcohol effects (FAE). Specific diagnostic categories include: partial Foetal Alcohol Syndrome, where some of the physiological symptoms of FAS may not be present; and Alcohol-Related Neurodevelopmental Disorder characterised by cognitive and executive functioning impairments. Whilst reported rates vary significantly across studies, a recent review estimated that 2–5% of children in Western countries are currently born with FASD (May et al., 2009). An earlier review of studies in the United States suggests a rate of between 0.5 and two cases of FAS per 1,000 births (May & Gossage, 2001).

Research indicates that FASD brings significant risk of a range of adverse outcomes in childhood and adulthood. For example, up to 90% of young people affected by FASD have been identified as experiencing mental health problems (Streissguth, Kopera-Frye, & Barr, 1994; Streissguth et al., 2004). Difficulties with educational engagement, employment, independent living, inappropriate sexual behaviour and addiction to substances have also been identified (Baer, Sampson, Barr, Connor, & Streissguth, 2003; Streissguth et al., 1994). Such adverse outcomes also include engagement with the criminal justice system (Baumbach, 2002; Boland, Chudley, & Grant, 2002). For example, based on life history interviews with “knowledgeable informants” of 415 young people and adults with FASD, Streissguth et al. (2004) report that 60% had experienced “trouble with the law” and 35% had been “incarcerated for a crime”.

The associations between the symptoms and expressions of FASD and criminal behaviour are well established, with deficits in cognition, executive functioning and hyperactivity among the individual characteristics that have repeatedly been found to increase the risk of offending (Morgan & Lilienfeld, 2000; Office of the Surgeon General, 2001; Ogilvie, Stewart, Chan, & Shum, 2011). In particular, “neuro-cognitive impairments” have been found to be strongly associated with “early onset” and “life course persistent” offending trajectories (Raine et al., 2005). In addition, young people with FASD are likely to be at greater risk of social and environmental risk factors for offending, including educational disengagement (Streissguth et al., 2004). It is also apparent that young people with FASD may be disadvantaged and discriminated against when within the criminal justice system, due to potential difficulties engaging in police interviews, court processes or interventions (Mutch, 2013; Stewart, 2016). Current approaches may therefore be failing to identify and respond to the needs of these young people.

Given such strong associations, it is timely and necessary to examine the prevalence of FASD among young people in youth justice systems, and to consider whether this is disproportionate to the rate among the general youth population.

## 2. Methodology

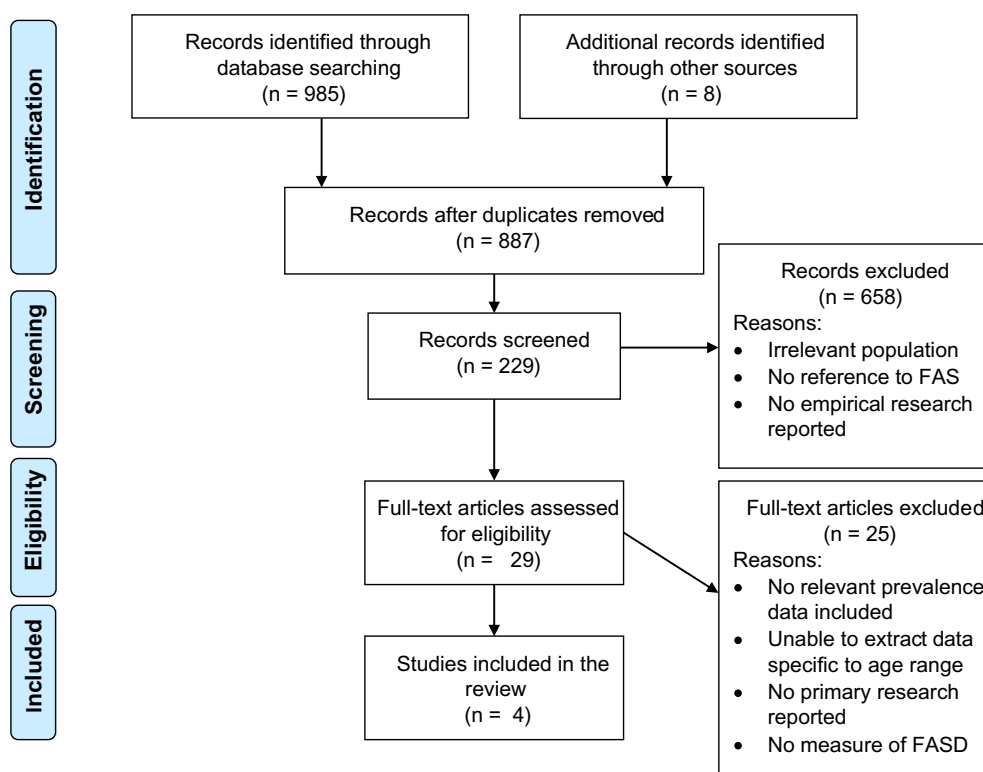
In September 2015, a systematic review of academic journal articles was undertaken utilising PRISMA guidelines, through a structured search of bibliographical databases, including PubMed, PsychINFO and Applied Social Sciences Index and Abstracts. Synonyms of key concepts related to “youth”, “crime” and the “criminal justice system” were combined with the various diagnostic categories associated with FASD. This was supplemented by a purposive search for evidence published by health, criminal justice and social policy organisations, as well as searches of bibliographies of included sources and for publications of key authors.

Decisions regarding inclusion were made by two researchers, with any disagreements resolved by a third researcher. Titles and abstracts were screened, with full papers reviewed where there was possible relevance. Studies were included if they provided a prevalence rate for one or more diagnostic category related to FAE among youth justice populations. Youth was broadly defined to include those up to the age of 21, so as to reflect classifications within various criminal justice systems. No lower age limit was specified, though clearly this is determined by the age of criminal responsibility and use of custodial intervention in specific countries. There were no exclusion criteria regarding the year of publication or geographical location of the research, though the review was necessarily restricted to publications in English.

Peer-reviewed research was assumed to be of sufficient quality. A senior researcher assessed the quality of research reports, utilising established criteria related to specific methodologies, including the Scientific Maryland Scale (Farrington, Gottfredson, Sherman, & Welsh, 2002), and the Global Assessment and Evaluation of Quality framework (Moran, Ghate, & van der Merwe, 2004). All sources selected for inclusion were read by at least two researchers, who independently extracted information regarding the research population and sample, the specific definition of FASD, data collection methods and reported prevalence rates.

A PRISMA flowchart illustrating the phases of the review is presented in Figure 1.

**Figure 1. PRISMA flow diagram** (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).



### 3. Results

The initial search revealed 886 sources, of which 27 were screened as requiring full review. At this stage, the vast majority of sources were rejected due to the clear irrelevance of the study population, including a lack of focus on young people or on criminal justice settings. Sources were also rejected where the emphasis was on measures related to maternal alcohol consumption rather than with assessment of FASD in the characteristics of the child. Sources that were clearly not based upon empirical research were also rejected at this stage.

Of the 27 sources of which the full text was assessed, only four were deemed suitable for inclusion in the review. The most common reasons for rejection of sources included: no prevalence rate being reported for a relevant sample or population; no primary empirical research being reported; no robust measurement of FASD or a related concept; or an inability to extract a prevalence rate for a relevant sample from the data as presented. Of the four sources included, two are peer-reviewed journal articles and two are research reports published by the McCreary Centre Society. Data extracted from the four sources are presented in Table 1.

All of the sources relate to populations of young people made subject to custodial interventions, with no identified studies reporting prevalence among young people on community orders, or at any other stage of the criminal justice system.

**Table 1. Studies examining the prevalence of FAS, FAE or FASD among young people in the youth justice system**

Reference	Country	Setting	Sample size	Stated sample characteristics	Data collection method	Stated diagnosis	Number of cases diagnosed	Prevalence rate (%)
Fast et al. (1999)	Canada	Forensic psychiatric inpatient unit	287	Age 12–18	Inpatient forensic psychiatric and psychological assessment	FAS	3	1.0
				Mixed gender (% not provided)		FAE	64	22.3
Murphy and Chittenden (2005)	Canada	Youth custody centres	137	Age 14–19	Survey: self-report of previous diagnosis by health professional	FASD	16	11.7
				89.8% male		Includes: Aboriginal youth	Not stated	19.0
				47% Aboriginal		Non-aboriginal youth	Not stated	6.0
				82% English language only				
Rojas and Gretton (2007)	Canada	Outpatient Youth Sexual Offence Treatment Programme	230	Age 12–18 (mean 15.91)	Review of client files following forensic psychiatric and psychological assessments	FASD ("formal diagnosis or suspicion")	25	10.9
						Includes: Aboriginal youth	18	26.9
				All male		Non-aboriginal youth	7	4.3
				71.6% Aboriginal				
Smith, Cox, Poon, Stewart, and McCreary Centre Society (2013)	Canada	Youth custody centres	114	Age 14–19	Survey: self-report of previous diagnosis by health professional	FASD	24	21.0
				81% male		Includes: Aboriginal youth	21	35.6
				52% Aboriginal		Non-aboriginal youth	3	5.5
				20% non-English speaking				
				65% experienced care system				

All of the sources report on research undertaken in Canada; thus no evidence regarding the prevalence of FASD within the youth justice system of any other jurisdiction was identified.

Rates of FASD, as reported within three study samples, range between 10.9 and 21.0%, with Fast, Conry, and Loock (1999) reporting a prevalence of FAE of 22.3%. The diversity of population and of method is such that it is inappropriate to combine data so as to calculate a composite prevalence rate. Despite this variation, all reported rates are significantly higher than those in comparable studies of the general population, as reported by May et al. (2009). Only Fast et al. (1999) report a prevalence rate for FAS, which is presented as likely to be significantly underestimated at only 1% of the sample.

Stratification by demographics is limited to comparison between Aboriginal and non-Aboriginal youth, as provided in three of the studies, with Aboriginal peoples including Métis, Inuit and various groups collectively referred to as First Nations peoples (Dickason, 2002). Prevalence among Aboriginal youth is reported to range between 19.0 and 35.6%. In comparison, reported rates for non-Aboriginal youth are between 4.3 and 6.0%, and are therefore within or marginally above reported rates for the general population. The proportion of Aboriginal young people within samples therefore greatly affects the overall prevalence rate of FASD.

No other comparisons of the prevalence of FASD on the basis of demographic information are reported, even where such information is provided on the sample. This includes a lack of focus on gender, even though three of the studies included both males and females. Two of the studies also report on the proportion of young people in the sample who have experienced the care system, though no comparison of rates of FASD is reported in either source. It is notable though that the two studies that indicate that the majority of the sample had experienced the care system also report the highest prevalence rates of FASD.

#### 4. Discussion

The review indicates a lack of robust research evidence regarding the prevalence of FASD among young people in criminal justice systems. Whilst all available studies suggest higher rates among criminal justice populations, there is therefore insufficient evidence to draw firm conclusions regarding the disproportionate prevalence of FASD among young people in the youth justice system.

Variation in reported rates of FASD may be reflective of variation in research methods, which include self-report of previous diagnosis of FASD and forensic psychiatric and psychological assessments—though it is notable that the highest and lowest reported rates are both based upon the latter. It may also reflect variation in population. In particular the proportion of Aboriginal young people within samples greatly affects the overall prevalence rate of FASD, and limits any ready assumptions about the relevance of this research to understandings of other contexts, including other countries in which Aboriginal communities are present.

Furthermore the apparent association between FASD and Aboriginal populations must be questioned. Given the wide disparity in reported rates between Aboriginal and non-Aboriginal youth, it is unclear whether the association between FASD and engagement with the criminal justice system is more accurately explained by criminalisation among Aboriginal youth in Canada, given their significant over-representation at each stage of the justice system (Calverley, 2007). The relationship is also potentially confounded by other experiences of discrimination and disadvantage experienced by Aboriginal communities. Rates of FASD cannot be readily separated from intergenerational disadvantage, poor access to health care and risk of mental health difficulties, for example (Adelson, 2005; Smith, Varcoe, & Edwards, 2005). What is more, the extent to which patterns in the research evidence accurately reflect a disparity between Aboriginal and non-Aboriginal populations in Canada has also been disputed. For example, Pacey (2008) has argued that studies of Aboriginal populations have typically focused on “higher-risk communities” and may therefore inappropriately “promote a perception of higher prevalence” across the Aboriginal population. Similarly Tait (2003) has argued



that research regarding FASD has focused heavily on Aboriginal communities due to perceived higher rates of substance abuse, and the evidence base does not therefore readily provide for robust comparisons to prevalence in non-Aboriginal communities.

Consideration must also be given to other potential explanatory factors for the high rates of FASD in these populations. In particular, experience of the care system may be indicative of a greater risk of FASD, depending on the prevalent reasons why young people have entered the care system. Indeed, given the well-established link between experience of the care system and the criminal justice system, research regarding the prevalence of FASD among young people in the care system would be beneficial.

Of the four sources that met the criteria for inclusion in the study, three were included in a previous systematic review of sources examining prevalence rates of FASD among custodial populations in youth and adult justice systems, undertaken in December 2010 (Popova, Lange, Bekmuradov, Mihic, & Rehm, 2011). Whilst the intended focus of the two reviews was markedly different, the absence of studies related to young people in community youth justice settings indicates a particular continued lack of understanding of the pathways of young people with FASD through the youth justice, prior to custodial intervention. It also suggests that there continues to be very little attention to the rates of FASD among young people in custody outside of Canada. Furthermore, only one study reports a rate of FAS.

This lack of evidence is indicative of the continued challenges in diagnosing FAS or FASD. Burd, Fast, Conry, and Williams (2010, p. 565) highlight three key issues seen to prohibit ready diagnosis:

(a) changes in the FASD phenotype over the lifespan, (b) inadequate documentation of [prenatal alcohol exposure] and (c) high rates of postnatal adversity which increase the complexity of diagnosis. (Burd et al., 2010, p. 565)

In addition, Astley (2011) highlights the “clear consensus” that diagnosis of FASD should involve “an interdisciplinary team”, “typically” including “a medical doctor, psychologist, speech language pathologist, occupational therapist, social worker, and family advocate”, as well as potentially involving “psychiatrists, neuropsychologists, geneticists, public health nurses, and mental health specialists”. This clearly implies significant levels of resource and established processes of interagency collaboration. It also ensures that such assessments are time-consuming and very expensive (Clarren & Lutke, 2008).

These universal challenges in assessing FASD are amplified in youth justice systems that typically lack access to the necessary trained clinical practitioners. Given the strong evidence base regarding the associations between FASD and offending careers, it is imperative that systems are developed that are able to identify and subsequently assess young people demonstrating potential symptoms of FASD. Given the range of indicators of FASD, this is likely to mean routine data linkage, enabling the collating indicators from various agencies and professionals, including maternal health, paediatric health, schools and social services. The development of data linkage models should therefore be a priority for academic research and policy development.

Until such issues with clinical diagnosis can be resolved, consideration to the relationship between FASD and offending may instead require researchers to focus on the co-occurrence of multiple symptoms that are known to be indicative of FASD. This approach is demonstrated by Momino et al. (2012), who assess for multiple specific traits associated with FASD among young people in custody, in lieu of clinical diagnosis. It may also be necessary for researchers concerned with criminality to examine the associations between FAE and specific forms of behaviour that indicate heightened risk of criminality, including the developmental sequela resulting in antisocial or aggressive behaviour. This might include consideration to “Disruptive, Impulse-Control, and Conduct Disorders” (American Psychiatric Association, 2013) and severe expressions of externalising behaviour.

Without attempts to overcome the barriers to recognition and assessment, it seems inevitable that young people with FASD will remain hidden within criminal justice systems in which they are at great risk of inadequate support, discrimination and therefore ultimately criminalisation, as is indicated by the available literature on prevalence rates in custody. Whilst this systematic review reveals a continued lack of evidence in relation to the prevalence rates of FASD across the continuum of youth justice provision, the process has therefore been valuable in offering impetus to future research and practice development in this field.

#### Funding

This work is supported by a European Commission Marie Curie International Outgoing Fellowship [grant number PIOF-GA-2012-331494].

#### Competing Interests

The authors declare no competing interest.

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#### Citation information

Cite this article as: A systematic review of the prevalence of foetal alcohol syndrome disorders among young people in the criminal justice system, Nathan Hughes, Betony Clasby, Prathiba Chitsabesan & Huw Williams, *Cogent Psychology* (2016), 3: 1214213.

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